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# Using Census Bureau Data for Current and Historical GIS Research

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# Using Census Bureau Data for Current and Historical GIS Research

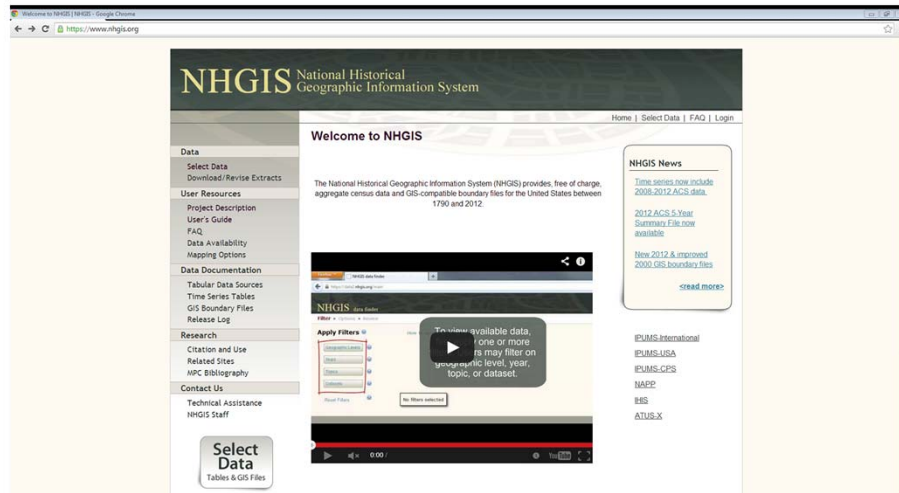
Professor Bert Chapman, Government  
Information, Political Science, and  
Economics Librarian

April 18, 2014

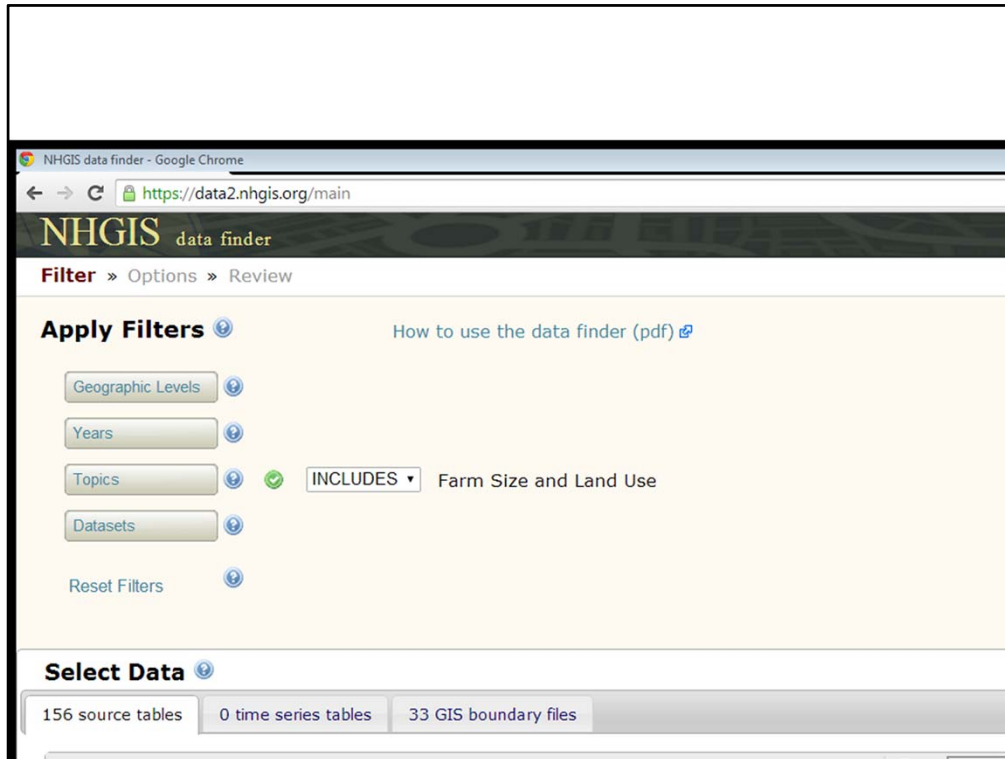
“Historical GIS takes the power of geographic analysis and applies it to historical research. Historians have long used maps to investigate, research, and teach history, but GIS greatly enhances the potential of this work by enabling the manipulation, analysis, and output of location information within the historical landscape.”

Jennifer Bonnell and Maurice Fortin,  
eds. Historical GIS Research in Canada.  
Calgary: University of Calgary Press,  
2014.

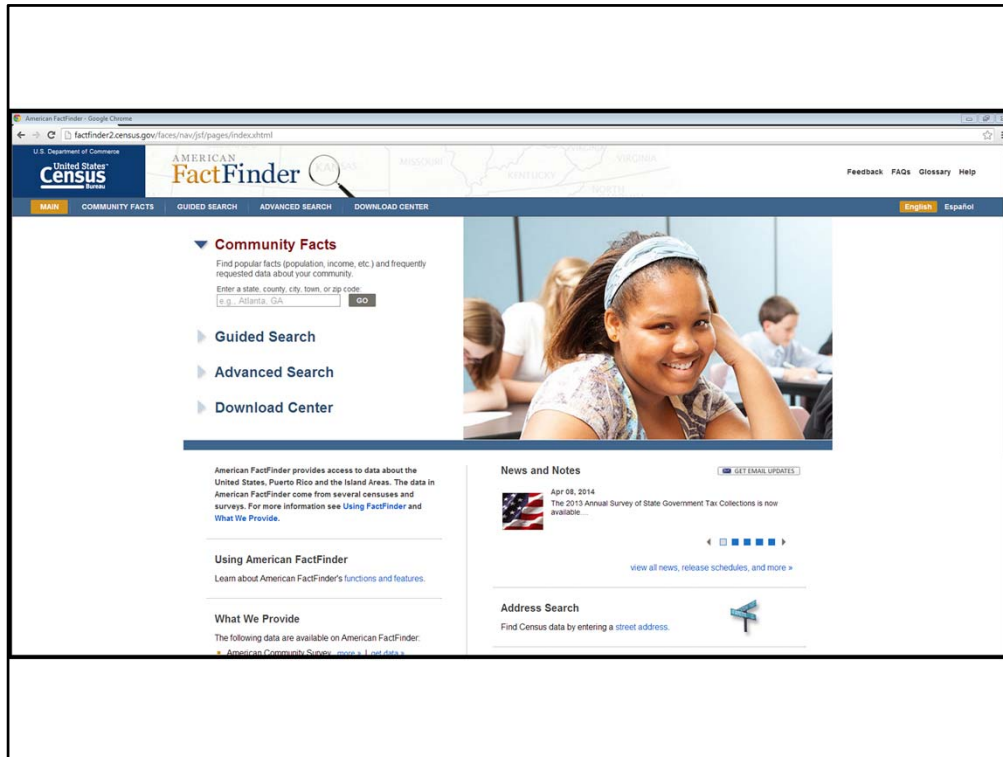
# National Historical Geographic Information System



NHGIS allows users to aggregate  
U.S. Census data and GIS  
compatible boundary files from  
1790-2012



1920 Agricultural Farm Size and Land Use

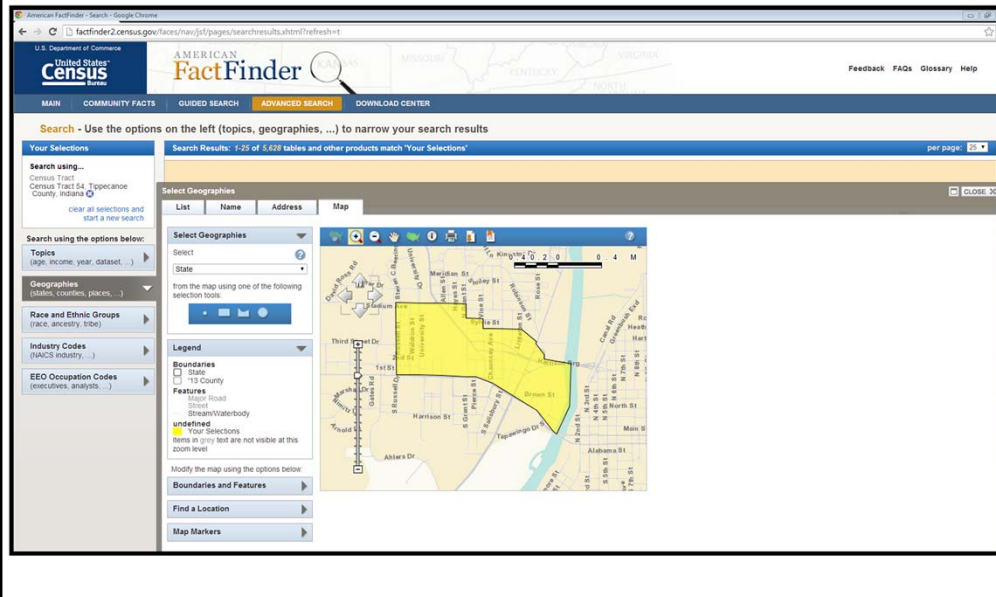


### **American Factfinder**

This Census Bureau resource provides demographic, economic, cartographic and social data on the U.S., states, counties, communities, and subcommunity regions from the 2000 Census of Population to present.



# Census Tract 54 Tippecanoe County, IN



# Tract 54 Selected Demographic Data-

American FactFinder - Results - Google Chrome

factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?\_afpt=table

U.S. Department of Commerce  
**United States Census Bureau**

AMERICAN FactFinder

MAIN COMMUNITY FACTS GUIDED SEARCH ADVANCED SEARCH DOWNLOAD CENTER

**Advanced Search** - Search all data in American FactFinder

1 Advanced Search 2 Table Viewer Result 1 of 1








S1501 EDUCATIONAL ATTAINMENT   
2008-2012 American Community Survey 5-Year Estimates

Table View 

BACK TO

Actions:  Modify Table |  Bookmark |  Print |  Download |  Create a Map

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Pop estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

American FactFinder - Results - Google Chrome

factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?\_afpt=table

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for

1 - 16 of 16	Subject	Census Tract 54, Tippecanoe				
		Households		Families		Married
		Estimate	Margin of Error	Estimate	Margin of Error	
	Total	1,693	+/-165	134	+/-71	
	Less than \$10,000	46.8%	+/-7.4	52.2%	+/-28.6	0
	\$10,000 to \$14,999	16.5%	+/-5.4	6.0%	+/-10.4	0
	\$15,000 to \$24,999	18.2%	+/-6.0	7.5%	+/-12.1	0
	\$25,000 to \$34,999	5.9%	+/-3.2	8.2%	+/-12.5	28
	\$35,000 to \$49,999	7.1%	+/-4.0	5.2%	+/-10.3	0
	\$50,000 to \$74,999	1.8%	+/-1.5	0.0%	+/-19.9	0
	\$75,000 to \$99,999	1.8%	+/-1.3	14.2%	+/-11.6	48
	\$100,000 to \$149,999	0.5%	+/-0.8	0.0%	+/-19.9	0
	\$150,000 to \$199,999	0.5%	+/-0.7	6.7%	+/-9.4	23
	\$200,000 or more	0.8%	+/-1.0	0.0%	+/-19.9	0
	Median income (dollars)	11,285	+/-2,931	4,833	+/-23,507	79
	Mean income (dollars)	18,248	+/-3,396	32,472	+/-21,067	
	PERCENT IMPUTED					
	Household income in the past 12 months	38.5%	(X)	(X)	(X)	
	Family income in the past 12 months	(X)	(X)	30.6%	(X)	

Tract 54 Income Data

# Tract 54 Ancestry

American FactFinder - Results - Google Chrome

factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?\_afpt=table

B04001 | FIRST ANCESTRY REPORTED  
Universe: Total population ⓘ  
2008-2012 American Community Survey 5-Year Estimates

Table View [icon]

Actions: [icon] Modify Table | [icon] Bookmark | [icon] Print | [icon] Download | [icon] Create a Map

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Pop estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Census Tract 54, Tippecanoe County, Indiana		
	Estimate	Margin of Error
1		
109 of 109	Total:	6,581 +/-501
	Afghan	0 +/-16
	Albanian	0 +/-16
	Alsatian	0 +/-16

# Historical Census Data Browser-

University of Virginia Library - Google Chrome

mapserver.lib.virginia.edu

UNIVERSITY of VIRGINIA LIBRARY

## Historical Census Browser

What can you do on this site?

- **Examine state and county topics for individual census years.**
  - examine multiple topics within a census year
  - produce tables of data by state or county
  - sort data by selected categories
  - create ratios between any two data categories

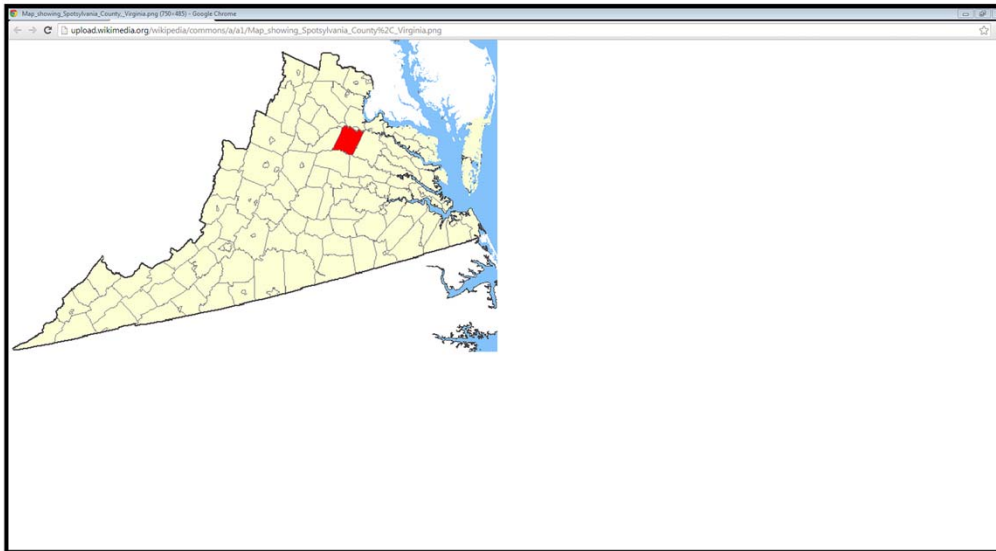
**Choose a census year to begin examining data:**

1790	1800	1810	1820	1830	1840	1850	1860	1870
1880	1890	1900	1910	1920	1930	1940	1950	1960

- **Examine state and county topics over time.**

This University of Virginia Library resource is a terrific mechanism for doing historical U.S. GIS research on multiple topics from Census Bureau data.

# Spotsylvania County Virginia



# 1860 Census True Value of Personal Property-Spotsylvania County

University of Virginia Library - Google Chrome

mapserver.lib.virginia.edu/php/county.php

	SOUTHAMPTON	4,300,340
	SPOTSYLVANIA	9,221,483
County	TRUE VALUE OF PERSONAL PROPERTY	
	Map It	
	STAFFORD	4,024,249
	SURRY	3,125,621
	SUSSEX	6,617,752
	TAYLOR	858,845
	TAZEWELL	2,101,677
	TUCKER	94,374
	TYLER	762,994
	UPSHUR	768,691
	Virginia STATE TOTALS	588,286,351
	WARREN	2,316,126
	WARWICK	619,482
	WASHINGTON	4,409,650
	WAYNE	511,471



# 1870 True Value and Personal Estate Spotsylvania County in \$millions

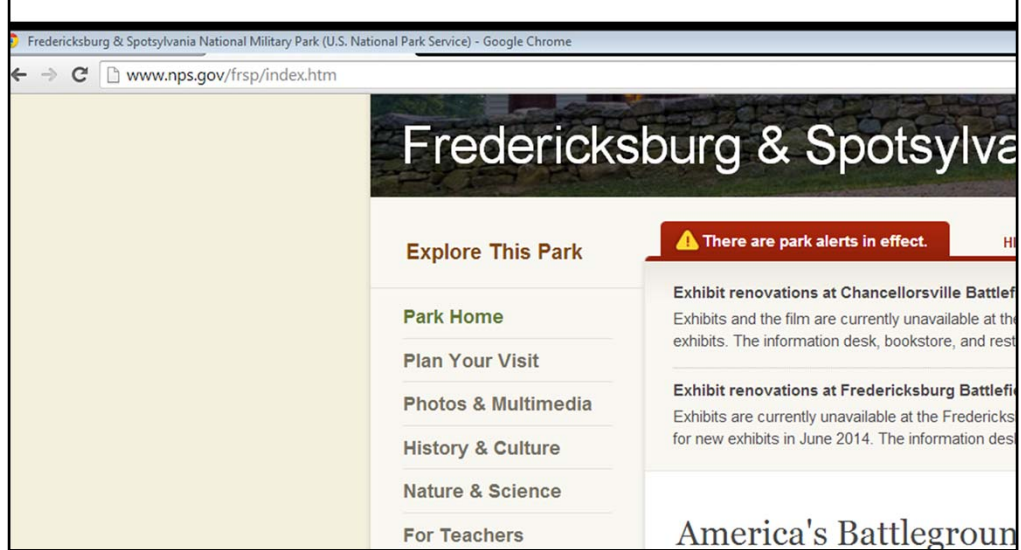
University of Virginia Library - Google Chrome

mapserver.lib.virginia.edu/php/county.php

ROCKINGHAM	13,443
RUSSELL	2,130
SCOTT	1,700
SHENANDOAH	6,728
SMYTH	2,810
SOUTHAMPTON	2,118
SPOTSYLVANIA	5,926
STAFFORD	2,000
SURRY	1,154
SUSSEX	1,344
TAZEWELL	2,365
Virginia STATE TOTALS	409,587
WARREN	2,637
WARWICK	494
County	TRUE VALUATION REAL AND PERSONAL ESTATE
WASHINGTON	5,900

36% property value decline!

Why was there such a drastic drop in property value?



# Applying GIS Data into Scholarship

The screenshot shows a PDF document titled "The Best Seat in the House: Using Historical GIS to Explore Religion and Ethnicity in Late-Nineteenth-Century Toronto". The document is displayed in a web browser window. The title is in a large, bold, blue font. Below the title, the authors are listed: "Andrew Hinson, Jennifer Marvin, and Cameron Metcalf". The main text of the document is in a smaller, black font. The document is divided into two columns by a vertical line. The left column contains the title and authors, and the right column contains the main text. The document is titled "4" in a small green box in the top right corner. The browser's address bar shows the URL: "dispace.ualgarny.ca/bitstream/1880/49926/6/UseGISPress\_HistoricalGIS\_2014\_Chapter04.pdf".

4

## The Best Seat in the House: Using Historical GIS to Explore Religion and Ethnicity in Late-Nineteenth-Century Toronto

*Andrew Hinson, Jennifer Marvin, and Cameron Metcalf*

In 1881 Toronto's Knox Presbyterian Church underwent major renovations to the inside of the building. The pulpit was lowered, the gallery front changed to iron, the pews comfortably upholstered, the entire floor carpeted, and the ceiling repainted and decorated. Most significantly, the seating arrangement was changed from the traditional straight-benched pews in formal order to a modified amphitheatrical layout with semi-circles forming around the pulpit. The realignment of the church's pews necessitated a reshuffling of where congregants were seated. Yet if contemporary reports were true that the refurbished auditorium was "virtually a new room" and in terms of artistic arrangement and taste "second ... to no church in Toronto," this congregant reshuffling was only a minor inconvenience.

In choosing a new pew, church members had to decide not only where they wished to be seated

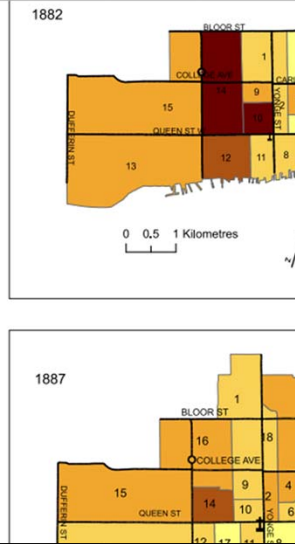
Chapter from *Historical GIS Research in Canada*  
examining Knox Presbyterian Church  
membership in Toronto ca. 1882-1887.  
Compiled from church membership and pew  
payment records

## Percentage of Knox Members by Geographic District

UofCPress\_HistoricalGIS\_2014\_Chapter04.pdf - Google Chrome

stream/1880/49926/6/UofCPress\_HistoricalGIS\_2014\_Chapter04.pdf

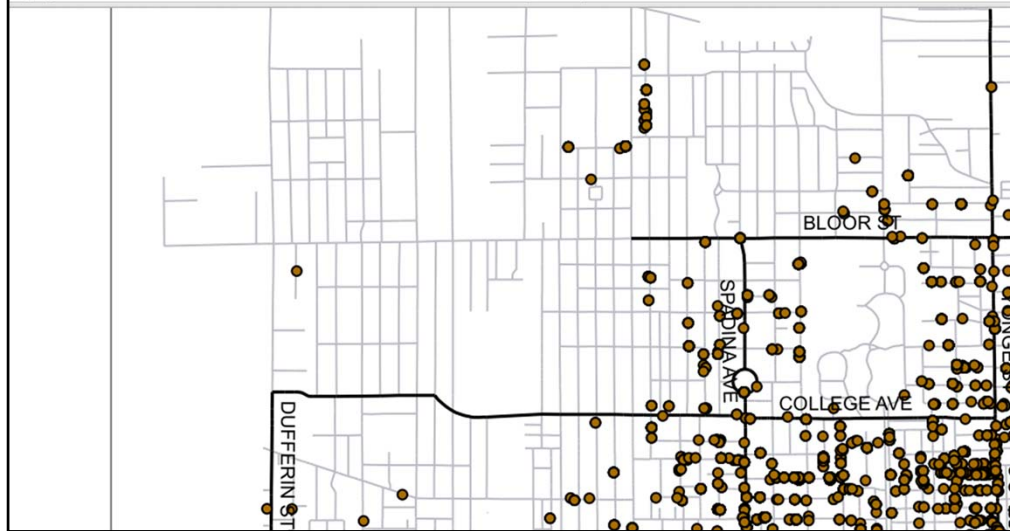
the pew rent book, the church's population climbed from 1,093 in 1882 to 1,624 by 1887. That so many new members could be physically accommodated was due to the increased seating capacity brought about by the church's timely renovations. Certain administrative changes did, however, have to be made. Most notably the number of church elders and deacons who were responsible for the care and oversight of the congregation had to be increased. All congregants were assigned to a church district, each with their own elder and deacon. The boundaries of these districts were printed alongside the Communion Rolls and can be recreated in a GIS to visualize how these administrative units changed over time (Fig. 4.1). As well as revealing the creation of



## 1887 Knox Members Residential Distribution

1880/49926/6/UofCPress\_HistoricalGIS\_2014\_Chapter04.pdf - Google Chrome

algary.ca/bitstream/1880/49926/6/UofCPress\_HistoricalGIS\_2014\_Chapter04.pdf



not be difficult to supply himself with a sitting, a poor man is frequently unable to pay for adequate accommodation for himself and his family.<sup>18</sup>

While exceptions exist, such as the case of Mrs. Adams of 18 Ord Street whose fees were waived because of her inability to pay, Knox did not assign general free seats. The church did of course have variations in pew rents, and it is possible that there was a stigma attached to sitting in the cheaper seats. Rosalyn Trigger's study of Protestant churches in Montreal discusses moves to abolish pew rents at certain churches in the late nineteenth century specifically because they made distinctions on the basis of wealth, and, at Knox, some of the movements between pews that took place from 1882 to 1887 suggest that ability to pay did influence where people sat.<sup>19</sup> Mrs. Hunter of 149 Sherbourne Street, for example, started out at a \$1.25 seat (pew 123) but moved to a \$1 pew (pew 183) when the number of sittings she was paying for increased from one to three. William

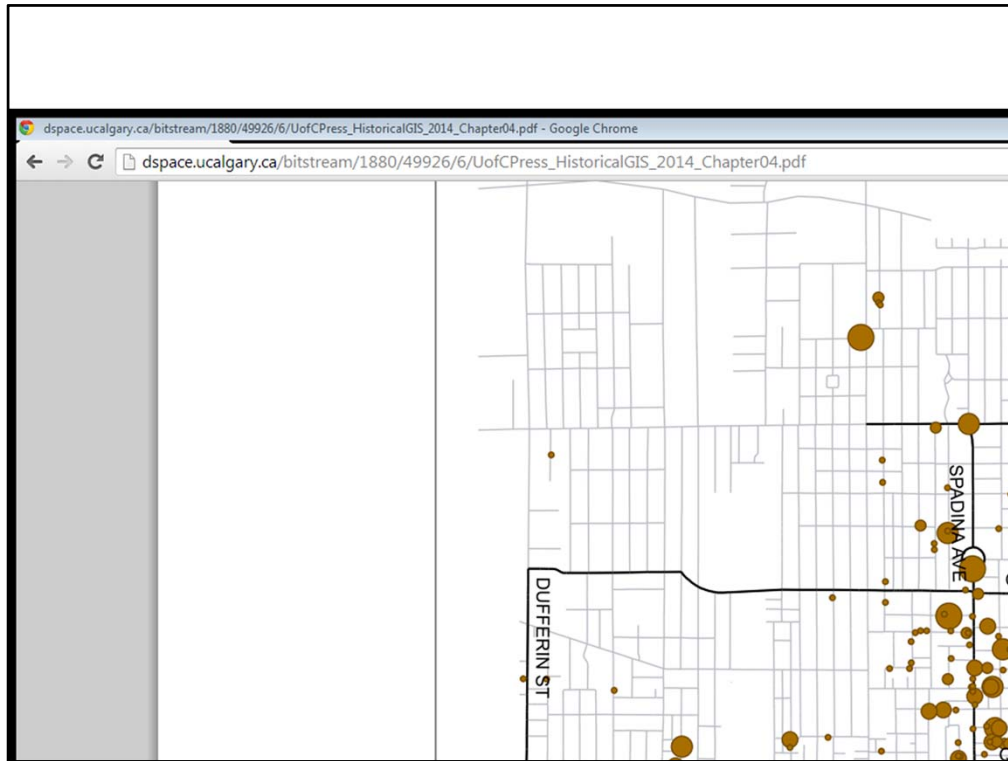
**Table 4.1:**  
**Occupational Categorization of Knox Congregants, 1882–87.**

	No.	%
Professional	59	21.9
Skilled non-manual	95	35.2
Skilled manual	84	31.1
Semi-skilled	20	7.4
Unskilled	12	4.4
Total	270	100

*Table 4.1: Occupational Categorization of Knox Congregants, 1882–87. (Sources: occupation: Knox Pew Rent Books 1882–1887.)*

apparent dependents, it is unlikely that cost was an influencing factor in where he sat.

Just as it would involve little more than guesswork to provide a reason as to what prompted James Donaldson to move around the church with such regularity, explanations of what brought the Knox community together are equally speculative. Individuals may have



Knox Members by Address



## Knox Members Residential Movements 1886-1887

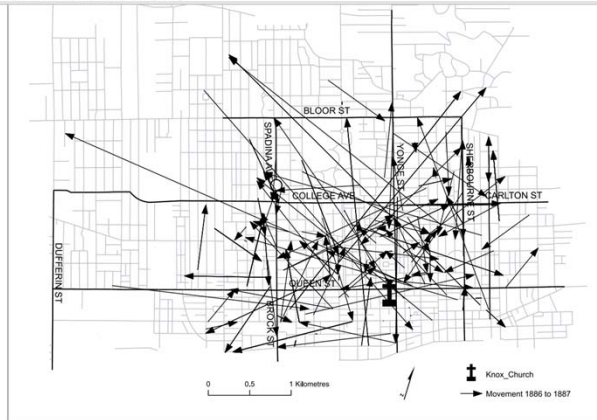
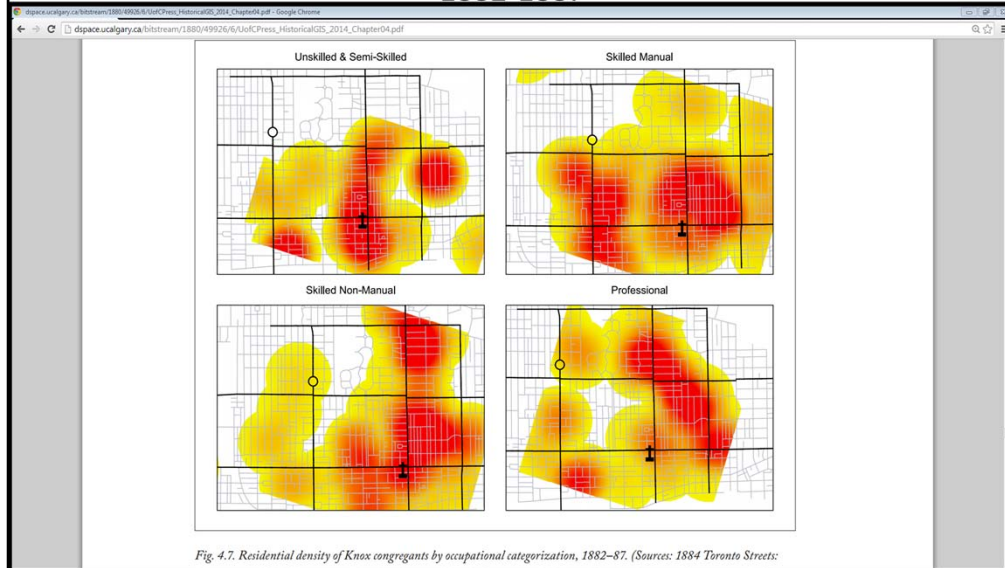


Fig. 4.4. Tracking residential movement of Knox congregants, 1886–87. (Sources: 1884 Toronto Streets: Adaptation of DMTI 2010; Knox Presbyterian Church Congregant Addresses: Knox Presbyterian Congregation Rolls 1882–1887.)

## Knox Members Residential Density by Occupational Category 1882-1887



GIS Research can enhance knowledge of historical and contemporary topics with interdisciplinary collaboration from multiple fields economics, geography, history, political science, religion, sociology etc.